

Claims

1. Threaded bolt having a proximal head end and a distal insertion end, wherein the head end and the insertion end have been provided with radial measurement planes for use in ultrasonic length measurement for determining the tension in the threaded bolt after it has been placed in a connection, wherein the measurement plane at the insertion end has been formed by the flat bottom of a recess at the insertion end, wherein the recess is bounded by a circumferential wall, which -seen in cross-section- at the outermost distal end of the bolt at a point changes into the flank of the insertion end via a buckle or curve.
2. Threaded bolt having a proximal head end and a distal insertion end, wherein the head end and the insertion end have been provided with radial measurement planes for use in ultrasonic length measurement for determining the tension in the threaded bolt after it has been placed in a connection, wherein the measurement plane at the insertion end has been formed by the flat bottom of a recess at the insertion end, wherein the recess is bounded by a circumferential wall, wherein the outermost distal end of the threaded bolt is formed by a circular line.
3. Threaded bolt according to claim 1 or 2, wherein the change from the circumferential wall of the recess into the flank runs according to a convex course.
4. Threaded bolt according to claim 1 or 2, wherein the change from the circumferential wall of the recess to the flank has a sharp buckle shape.

5. Threaded bolt according to any one of the preceding claims, wherein the circumferential wall of the recess forms a conical surface which is oblique with respect to the bolt centre line, the angle of which is maximally 75° with respect to the bolt centre line, preferably also more than 45° .
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6. Threaded bolt according to any one of the preceding claims, wherein the flank in the end portion which is contiguous to the circumferential wall of the recess forms a flank conical surface oblique with respect to the bolt centre line, the angle of which is maximally 45° with respect to the bolt
- 10 centre line.
7. Threaded bolt according to claim 6, wherein the flank conical surface at the proximal side changes into a cylindrical plane via a which is less oblique with respect to the bolt centre line, for instance at $25-35^\circ$, which
- 15 cylindrical plane may or may not be contiguously provided with the thread.
8. Threaded bolt according to any one of the preceding claims 1-7, wherein the distal end of the bolt provided with the aforementioned recess is truncated.
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9. Threaded bolt according to any one of the preceding claims, wherein the recess has been formed by means of one single upsetting treatment of the insertion end.
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10. Threaded bolt according to any one of the preceding claims, wherein said oblique flank has been obtained by means of a machining treatment.
11. Threaded bolt according to any one of the preceding claims, wherein the measurement plane on the insertion end has been arranged without
- 30 final processing operation.
12. Threaded bolt having a proximal head end and a distal insertion end,

wherein the head end and the insertion end have been provided with measurement planes for use in ultrasonic length measurement for determining the tension in the threaded bolt after it has been placed in a connection, wherein the measurement plane at the insertion end forms the end plane there and has been arranged on the insertion end without final processing operation.

13. Threaded bolt according to claim 12, wherein the measurement plane has been arranged at the insertion end by means of an upsetting treatment.

14. Threaded bolt according to claim 13, wherein the measurement plane has been arranged at the insertion end simultaneously with the treatment of heading the threaded bolt in a bolt machine.

15. Threaded bolt according to claim 13, wherein the measurement plane has been arranged at the insertion end simultaneously with the treatment of reducing the shank of the threaded bolt in the bolt machine.

16. Threaded bolt according to any one of the preceding claims, wherein the measurement plane at the head end is manufactured in the same way as the measurement plane at the insertion end, preferably in the same operation.

17. Threaded bolt according to any one of the preceding claims, wherein the measurement plane at the insertion end has been arranged during the machining treatment of the insertion end in a point-making machine accommodated in a bolt machine.

18. Threaded bolt according to any one of the preceding claims, wherein the measurement plane at the head end is located recessed.

19. Threaded bolt comprising one or several of the characterizing measures

described in the description and/or shown in the drawings.

20. Method comprising one or several of the characterizing measures described in the description and/or shown in the drawings.